



October 6, 2006

National Organic Standards Board  
Livestock Committee  
United States Department of Agriculture  
Room 4008 - South Building  
1400 Independence Avenue, SW  
Washington, DC 20250-0001  
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**RE: National Organic Standards Board (NOSB) Aquaculture Standards**

Food & Water Watch is pleased to have the opportunity to comment further on the *Interim Final Report of the Aquaculture Working Group Winter 2006* as posted on the United States Department of Agriculture's National Organic Standards Board (NOSB) web page. Food & Water Watch is a national non-profit consumer advocacy organization that seeks to ensure the health, nutritional and environmental integrity of our food and water supplies.

Food & Water Watch hopes that the USDA takes this matter seriously to develop true organic standards in order to offer consumers the confidence they need to make the best seafood choices.

Most importantly, Food & Water Watch is concerned that fishmeal and fish oil from wild fish are used to feed the farmed aquatic species. This should not be allowed, as a variety of scientific studies have found that farmed fish have high concentrations of persistent organic pollutants (POPs), such as dioxins, dioxin-like PCBs, PBDEs, and organochlorine pesticides, such as toxaphene, due to high concentrations of these contaminants in the wild fish they are fed.<sup>1</sup> In addition, organic standards must only apply to closed systems. Finfish raised in the open ocean must not be certified as organic, nor any seafood raised in coastal net pens or cages.

**I. Impact on the Environment**

*How will organic aquaculture meet the requirement of maintaining or improving the environment?*

Only closed, inland aquaculture facilities, which can prevent the spread of disease, escapement and the contamination of the surrounding environment, may be considered for organic certification. Use of open water net pens must not be permitted.

**A. Producers must not discharge untreated effluents.**

Producers must not be permitted to directly discharge untreated aquaculture wastes into the environment. Only closed facilities, in which producers contain and properly treat aquaculture waste may be considered for organic certification. Ponds, tanks, and raceways must collect sludge and wastewater for on-site treatment. Section 205.203(c) of the Organic Foods Production Act Provisions clearly states:

*The producer must manage plant and animal materials to maintain or improve soil organic matter content in a manner that does not contribute to the contamination of crops, soil, or water by plant nutrients, pathogenic organisms, heavy metals, or residues of prohibited substances.*

Thus, for aquatic animal production standards to be consistent with the established organics code, §205.255(i) should be edited to read:

(i) Effluent discharges must comply with all local state and national water quality laws, and include treatment ~~when necessary~~ in accordance with the provisions of §205.203. Wastewater from facilities must not be directly discharged into open, aquatic environments or the surrounding terrestrial environment.

Additionally, Food & Water Watch recommends that the first sentence of §205.250(2) be edited to read:

(2) Aquaculture facilities must manage nutrients and wastes in accordance with §205.203, with the addition of hydroponics as a potential treatment option.

### **1. Net pen and cage culture must not be considered for organic certification**

Net pen and cage culture do not meet the standards outlined in §205.203. The adverse environmental impacts of these facilities have been well documented. Effluent, in the form of uneaten feed and fish waste, is released directly into the aquatic environment. It may reduce dissolved oxygen levels, cause algal blooms, poison ocean wildlife and cause other severe disturbances. The negative impacts increase with the size and concentration of the facility; a farm with 200,000 salmon emits approximately the quantity of nitrogen phosphorous and fecal matter equal to the untreated sewage from 20,000, 25,000 and 65,000 people, respectively.<sup>ii</sup>

Uneaten feed and feces released into the water have been found to contain nitrate, nitrite, ammonia, phosphate and heavy metals such as copper and zinc.<sup>iii</sup> These excess nutrients can lead to increased growth of primary organisms such as phytoplankton, and a decrease in dissolved oxygen, negatively impacting wild flora and fauna.<sup>iv</sup> The increased water turbidity impedes the penetration of sunlight into the water, thus reducing photosynthetic activity of desirable aquatic plants.<sup>v</sup> Suspended solids can also damage the gills of wild fish, increasing susceptibility to disease.<sup>vi</sup> Uneaten feed and feces also settles in the sediment below the cages, causing changes in the chemistry of the sediment, oxygen depletion, and the development of anaerobic bacterial mats.<sup>vii</sup> The settled waste can also smother fish eggs and other small organisms living on the bottom.<sup>viii</sup>

These environmental impacts are unacceptable for organic production. They are also entirely unnecessary. By cultivating aquatic organisms in closed systems, where wastes can be appropriately managed, such negative impacts can be easily avoided. Therefore, organisms that are raised in net pens and cages must not be certified organic. Food & Water Watch recommends that §205.255(k) be revised to read:

(k) Open water and coastal net pens and enclosures are not permitted.

## **2. Facilities with direct soil-water contact must not be certified organic**

The above-listed environmental impacts of net-pen are mirrored in pond culture, and must be contained. Thus, the pond must be constructed so as not to contaminate the soil underneath nor nearby the pond. All ponds, including water treatment ponds, must be lined, such as with plastic or concrete, to prevent contamination of the surrounding soil.

Food & Water Watch recommends that §205.255(l) be edited to read:

(l) All ponds, including water-treatment ponds must be lined with plastic or concrete. Production systems with direct soil-water contact are not allowed.

## **3. Ponds must be constructed to prevent overflow during severe weather conditions**

Artificial levees must be constructed around ponds, and the water level must be maintained at least six inches below the top of the facility, to prevent overflow. In addition, the facility must not be placed in a flood plain.

Food & Water Watch recommends that §205.255(e) be expanded to read:

(e) Pond berms and tank tops shall be at sufficient elevations to prevent contamination from the environment during floods. Ponds and tanks must be constructed to prevent overflow during severe weather, and the water level must be maintained at least six inches below the top of the facility, to prevent overflow.

## **B. Aquaculture practice must not harm wild aquatic or avian species.**

The NOSB Principles of Organic Production and Handling 1.1 states:

*1.1 Organic agriculture is an ecological production management system that promotes and enhances biodiversity...*

Thus, no aquaculture practices that put wild populations at risk can be considered organic. The current draft standards do not go far enough to protect wild fish, birds, mammals and other aquatic organisms from harm.

## **1. Facilities must be constructed inland and at a reasonable distance from ponds, lakes rivers and oceans to eliminate risks from escapement**

The escapement of farmed aquatic species can pose a serious threat to wild populations through the spread of disease, competition for resources, and interbreeding. Such harm is inconsistent with the NOSB Principles of Organic Production and Handling.

Unfortunately, escapement is a common phenomenon in netpens and cages, which may be damaged from predator attacks and severe weather. In 2002, one storm in Maine caused the escapement of 100,000 salmon from a single farm.<sup>ix</sup> Escapement can also occur during the flooding of raceways and ponds that are constructed adjacent to bodies of water.

Outbreaks of disease and parasites have been a consistent problem in fish farms. When infected organisms escape, they can spread disease to wild fish populations.<sup>x</sup> In 2002, about 75% of escaped salmon from farms in Scotland were infected with Infectious Pancreatic Necrosis (IPN).<sup>xi</sup> In Norway, the sea lice infestation level for wild salmon was found to be higher in areas with salmon farms.<sup>xii</sup>

Escaped fish that are not diseased can also pose a risk to wild species. For example, escaped blue tilapia have become established in the Florida Everglades and compete with native fish for food and spawning areas.<sup>xiii</sup> Even farmed species that are native to the area will likely be genetically identical, and can thus weaken wild populations through interbreeding.<sup>xiv</sup>

Based on the dangers that escaped farmed species can pose to wild populations, Food & Water Watch recommends that § 205.255(j) be edited to read:

(j) Cultured organisms must be raised in inland facilities and be managed with appropriate safety measures to eliminate escapes due to predators, adverse weather conditions (including floods), or facility damage.

## **2. Facilities must not discharge wastewater directly into aquatic environments**

Wastewater from facilities can contain pathogens or infected fish eggs and larvae.<sup>xv</sup> To prevent the spread of disease to wild populations, ponds and raceways must not drain wastewater directly into aquatic environments, including during harvest.

## **3. Producers must not intentionally kill, harm, or harass predators and other wild species**

Aquaculture facilities can attract predators such as birds. It is contrary to the principle of promoting and enhancing biodiversity to shoot predators, as is often done in the case of birds. In the period 1989-1993, over 51,500 birds were killed under legal permit at fish farms.<sup>xvi</sup>

In net pen and cage facilities, predators such as sharks and seals are also an issue. Aquaculturists use acoustic harassment devices or acoustic deterrent devices to keep the predators away. The noise emitted from these devices can cause seals and other aquatic life such as dolphins, whales, porpoises, sea turtles and fish to become disoriented or experience pain or hearing loss.<sup>xvii</sup> Wild species are thus driven from potentially important areas of the ocean.

Therefore, to prevent harm to wild marine and bird life, Food & Water Watch recommends the addition of §205.255(o):

(o) Aquaculturists must not, kill, harm, or harass predators and other wild species. The use of acoustic harassment devices or acoustic deterrent devices is prohibited.

## **II. Differences Between Organic and Conventional Aquaculture Standards**

Consumers expect that organic food is produced based on standards that go above and beyond basic requirements for food safety, wholesomeness, environmental sustainability, and (in the case of aquatic and terrestrial livestock) animal welfare. These expectations are embodied in the NOSB Principles of Organic Production and Handling.

Food safety: Consumers expect that organic aquaculture products have not been produced using pesticides, piscicides, fungicides, algaeicides, artificial hormones, antibiotics, or artificial colorants. Organic food must not contain cancer-causing chemicals.

Health: Consumers expect that organic food is as or more wholesome than conventional food. As many consumers eat fish for their omega-3 fatty acids, organic fish must have an equal or superior fatty acid profile when compared with conventionally produced or wild fish.

Environmental sustainability: Consumers expect that organic aquaculture does not pollute the surrounding environment with chemicals or excess waste. Also, organic aquaculture must not have a negative impact on wild flora and fauna, especially endangered and overfished populations.

Animal welfare: Consumers expect that aquatic organic organisms are raised in conditions superior to those of conventionally aquaculture facilities. Organic facilities must have a lower stocking density to reduce stress and mechanisms to prevent infection and disease among the fish.

## **III. Use of Fish Meal and Fish Oil**

*Will the organic consumer find the temporary 12% fish oil and fishmeal allowances acceptable?*

No. Wild aquatic species must not be used as feed for organic farm-raised aquatic animals. Consumers expect that organic products are not contaminated with cancer-causing compounds and pesticide residues. They also expect that organic food has been produced in an environmentally sustainable way. Fish that consume wild fishmeal and fish oil are neither safe nor sustainably produced.

Capturing wild species for feed will increase the stress on wild fish populations. According to the United Nations Food and Agriculture Organization, 75% of the world's

wild fish populations are approaching an overfished condition, overfished or depleted. The small fish used for fish feed are food for large wild fish, such as cod. Removing small fish from the oceans for aquaculture will only exacerbate the problems. We explain below why drawing from third-party certified sustainable fisheries does nothing to solve this problem.

With regards to consumer health impacts, a variety of scientific studies have found that farmed fish that were fed fishmeal from a wild source have higher concentrations of persistent organic pollutants (POPs), such as dioxins, dioxin-like polychlorinated biphenyls (PCBs), polybrominated diphenylethers (PBDEs), toxaphene and organochlorine pesticides (OPs) such as DDT, than wild caught fish.<sup>xviii</sup> For example, in two studies of the contaminants in supermarket salmon, Hites, et al. (2004) found farmed salmon to contain an average of ten times the levels of OPs and PBDEs as wild-caught salmon.<sup>xix</sup>

Many scientists have concluded that fishmeal and fish oil produced from wild-caught fish is the likely the primary route of entry for these contaminants into the farmed fish.<sup>xx</sup> Fishmeal and fish oil have extremely high levels of contaminants.<sup>xxi</sup> The tissue of farmed fish has been found to have POP congener distributions that are similar to the feed it consumes.<sup>xxii</sup> In one study, toxaphene was found in samples of farmed trout tissue, although the pesticide had never been used in the region of the trout farm, indicating that the contaminated feed had been the source of the toxaphene.<sup>xxiii</sup>

The high concentration of these contaminants in fish that consume fishmeal raises serious concerns for consumer health. The EPA has classified TCDD (a dioxin), and deca-BDE (a PBDE) as “carcinogenic to humans,” and has classified PCBs, DDT and toxaphene as “probable human carcinogens.”<sup>xxiv</sup> Human exposure to dioxins has been associated with suppression of the immune system, altered behavior, reduced memory, and an increased risk of diabetes.<sup>xxv</sup> Dioxins have also caused disruption to hormonal function, fetal development and reproductive capabilities in laboratory animals.<sup>xxvi</sup> PCBs have been found to adversely affect the immune, reproductive, nervous and endocrine systems, disrupt neurological development in utero, impair memory in older adults, as well as causing stomach, liver and kidney damage.<sup>xxvii</sup> Additionally, PBDE’s can disrupt neurological development and thyroid hormones, and may cause liver toxicity.<sup>xxviii</sup> Developing fetuses and nursing infants are especially vulnerable to the effects of these contaminants.

The contaminants in the fishmeal and fish oil bioaccumulate in the fatty tissue of farmed fish that consume the feed, and are then passed along to the human consumer. In a study of contaminants in farmed salmon, Hamilton, et al. (2005) report:

By following fish consumption guidelines developed by the U.S. Environmental Protection Agency (USEPA) for three of these substances (polychlorinated biphenyls (PCBs), toxaphene, and dieldrin) and assuming cancer risk additivity, we calculated that the consumption of more than one meal [of farmed salmon] a month, on average, would increase the risk of cancer beyond the level of 1 in 100,000.

The above health concerns are unacceptable in certified organic food. Food & Water Watch recommends that organic fish must not be fed feed made from wild-caught fish. All feed fed to organic certified aquatic species must be organically farm raised itself. Live fish may be used as food source, provided that the feed fish were raised in accordance with organic standards.

*What will consumer reaction be if certain aquaculture products no longer qualify as organic?*

Organic standards must be strong and consistent in order to for consumers to have confidence that organic products meet high health and environmental standards. It is deceptive to consumers to temporarily certify a food as organic if the Board knows that the food was produced in an unsustainable way. If consumers lose confidence in the organic standard, organic foods lose their value-add, thus eliminating the incentive for producers to use organic farming methods.

*Will it be possible for other feed ingredients or organic sources of fish oil and fishmeal to be developed within this time frame?*

Regardless of the time frame, fish should only be certified as organic when they can meet consistent standards that ensure sustainable production.

#### **IV. Sources of Fish Meal and Fish Oil**

As explained above, wild fish must not be used as a source of fishmeal and fish oil for farmed fish. Furthermore, third-party certification of sustainable fisheries is not acceptable and fails to ensure the accountability and transparency so critical to genuine organics. Below are just a couple examples of the problems associated with third party certifiers.

In 1994, the Japanese company Alter Trade Japan, Inc. began marketing “ecological” shrimp in Indonesia. By 2002, they established an organic certification project with Germany-based Naturland, and the first farms were certified by 2002. The following year, independent researchers uncovered that these Indonesian farms were far from what they were expected to be. Instead, the farms refused access for inspections and verification of practices by scientists, civil society or local communities. Naturland’s standards were not met in several areas of the program, including issues of mangrove degradation and deforestation, training of staff, compliance with Indonesian legislation, and contamination of surrounding bodies of water. It was also found that certified and non-certified shrimp were often mixed up prior to transportation. Even worse, studies of the “organic” shrimp farms in eastern Java, Indonesia, show that chemicals and antibiotics can be used for a third of a shrimp’s lifespan and still be certified.<sup>xxix</sup>

Other third-party certifiers have also proven to be inadequate, as seen in the Marine Stewardship Council (MSC), which has certified wild fisheries even when those fisheries do not abide to MSC’s principles and criteria. For example, MSC certified the hoki

fishery in New Zealand despite failing fish stocks and the annual killing of hundreds of seals and birds in the fishery. More recently, MSC certified the South Georgian toothfish fishery despite numerous problems such as questionable chain of command and illegal fishing of species. Further problems included unknown population levels, which could be low enough to label the species overfished.

Third-party certification allows for a lack of accountability and has proven to be ineffective in ensuring that standards are properly met. Thus, to source feed fish from third-party certified fisheries does guarantee true sustainability.

## **V. Slaughter By-products in Aquaculture Feed**

Food & Water Watch opposes the use of by-products from the slaughter of terrestrial animals in organic aquaculture feed. Most consumers would not assume that organic fish had been fed terrestrial animal by-products, so it is deception by omission to not inform consumers of the use of such products in the feed. Many consumers who eat fish do not eat meat. Those consumers could purchase organic fish under the false pretense that the fish had not consumed animal by-products. On learning the truth, such consumers would lose confidence in the organic standard, undermining its value for both consumers and producers.

Additionally, we are concerned about the potential for disease transfer from the animal by-products. The 2003 FAO report “Integrated livestock-fish farming systems,” identifies the potential link between the use of poultry by-products in aquaculture and the emergence of influenza pandemics.<sup>xxx</sup> Avian influenza virus could be spread to wild waterfowl through fecal contamination in the water. Should contaminated by-products be used in aquaculture feed, the virus could be spread to wild birds, creating a public health risk. Indeed, the organization BirdLife International reported a possible link between the use of poultry by-products in fish farming and the 2005 outbreaks of HPAI H5N1 avian influenza in Romania, Turkey and Croatia.<sup>xxxi</sup>

## **Conclusions:**

Food & Water Watch appreciates the opportunity to comment further on the Interim Final Report of the Aquaculture Working Group. We hope that our recommendations and amendments are incorporated into the final standards in order to protect the integrity of organic labeling, thus offering a high level of confidence to American consumers. If you have any questions, or would like to request a copy of any of the referenced studies, please contact Andrianna Natsoulas at [anatsoulas@fwwatch.org](mailto:anatsoulas@fwwatch.org).

Sincerely,

QuickTime™ and a  
TIFF (Uncompressed) decompressor  
are needed to see this picture.

Andrianna Natsoulas  
Campaign Coordinator  
Food & Water Watch



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